

nish their full quota of myrmecophiles. The capture of numbers of *Araeoschizus armatus* in an anthill at Green River, Wyo. has already been recorded by me (Ent. amer., v. 6, p. 84) and quoted by Mr. Schwarz in his paper cited. Though Dr. Horn holds that *Araeoschizus* is neither parasitic nor inquiline, the fact remains that they are much more abundant in and around ant's nests. I noticed this especially at Tuscon in the case of three species (*A. regularis*, *fimbriatus* and *simplex*) which I found there in considerable numbers.

*Notibius puberulus* is often found in ant's nests or in the immediate vicinity.

At Fort Yuma I have noticed them running across ant hills or around the entrances to the underground galleries without the interference of the ants; near Los Angeles while at work with Mr. Coquillet we dug up a large nest and found in it, besides some specimens of *Notibius puncticollis*, a number of *Conibius elongatus* and *Eurymetopon convexicolle*. I think it quite possible, considering that nothing is known of the early stages of these beetles, that they may breed in the nests, though it is also likely that they may use them simply for shelter just as *Elcodes dispersa* uses the holes of prairie dogs.

## ADDITIONAL NOTES ON BOMBYCID LARVAE.

BY HARRISON G. DYAR, BOSTON, MASS.

HALSIDOTA ALNI Hy. Edw.

1876—Hy. Edw., Proc. Cal. acad. sci., vii, 129 (as a variety of *H. agassizii*).

1882—Grote, New check list, p. 16.

1891—Smith, List. lep., no. 1129 a.

*Mature larva*.—Head rounded, smooth, black and very shiny; bases of antennae, labium and a line below clypeus yellow; width 3.5 mm. Body black, mottled with yellowish, which predominates ventrally; abdominal feet dull yellow, the claspers brownish; thoracic feet black; spiracles white. The warts are arranged as in *H. maculata*\* and bear dense, spreading tufts of feathery hairs of even length, but slightly longer dorsally on joints 5 and 12, and keeled along dorsal line. On joints 2-6 and 10-13 the hair is deep black, on joints 7-9 orange ochraceous†. In the black parts at

both ends are several long, thin, white pencils, consisting of from one to several hairs and arranged as follows:—on joints 3 and 4 from warts 2-5; on joint 5 from warts 1-5; on joint 6, a single hair from warts 3 and 4; on joint 10 a single hair from warts 2-4; on joint 11 from warts 2, 3, and 5; on joint 12 from warts 1 and 2 and on joint 13 from the large wart and the lateral one.

*Food plants*.—Willow (*Salix*) and alder (*Alnus*).

*Habitat*.—The Sierra Nevada range of California and probably further north. Mr. Edwards's example came from Shasta Co., mine from Mariposa Co.

HALSIDOTA AGASSIZII Pack.

1864—Packard, Proc. ent. soc. Phil., v. 3, 128.

1873—Stretch, Zyg Bomb. N. A. v. 1, 103

1889.—Hy. Edw., Bull. no. 35, U. S. nat. mus., 62. *pr. var. of maculata*.

1891—Smith, New list, p. 27. *maculata*.

\* See Psyche, vol. 6, p. 165.

† Ridgway's Nomenclature of colors, pl. v, fig. 3.

*Mature larva.*—Very variable in color. The head is as in *H. alni* described above, the color of the body varies much in the amount of black from entirely black to nearly all yellowish. The hair is like that of *H. alni* in structure and the white pencils are the same or partly yellowish, but the hairs that arise from the warts and obscure the body are nearly maize yellow\* and the amount of black at the ends of the body is variable. Besides there is usually present the series of lozenge-shaped black dorsal tufts on joints 5-12 which is seen on *H. maculata*; but these may be much reduced, or absent. I have not, however, seen any examples in which they were wanting which also had the black extremities well developed. One example occurred to me with its hair entirely yellow except the white pencils. From this there are all intergrades to a form with joints 2-6 and 10-13 bearing deep black hairs besides the black dorsal tufts on joints 7-9 and the usual white pencils. Examples occur that are not to be distinguished from *H. maculata*, that is with only the eight dorsal tufts colored black. A singular variety was found with joints 4-5 and 10 posteriorly to 12 and the dorsal tufts on joints 6-10 black, joints 2, 3, 12 laterally, 13 and all the hair from warts 3-6 on joints 6-10 white, the hair from warts 1-2 on joints 6-10 yellow. White pencils normal.

*Food plants.*—Willow (*Salix*) and alder (*Alnus*).

*Habitat.*—California, in low land near the coast. (Santa Barbara and San Francisco).

ORGYIA LEUCOSTIGMA Smith and Abbot. 1797—S. and A., Lep. ins. Ga., 157, pl. 79. 1889—Hy. Edw., Bull. no. 35, U. S. N. M., p. 63 (gives 23 references).

1889—Packard, 5th rept. U. S. ent. com., p. 262.

In spite of the fact that the larva of this species has long been known and excellently illustrated and described by Dr. Riley, I

have seen no account of the preparatory stages that agrees with my observations. Dr. Riley says:—"Six days after the third moult" [*i. e.* at the end of the fourth stage] "a portion of the larvae spin up; these all produce male moths. The female caterpillars . . . undergo a fourth (and as it appears from more recent experience, in some instances even a fifth) molt . . ." That is, male larvae have four stages and female, five or six. In my experience, male larvae have six stages and female six or seven (usually seven) just as is the case also with *O. definita* Pack. and *O. cana* Hv. Edw. which I have described.

I give briefly the stages as I have observed them.

*Egg.*—Nearly spherical, smooth, not shiny; color yellowish white, a large round pale brownish spot at the vertex surrounded by a ring of the same color. Diameter 0.9 mm. Laid in a mass on the cocoon of the ♀ moth and covered with froth which becomes hard and white when dry.

*First larval stage.*—Head shiny, pale, subtranslucent brownish, darker on the vertex; ocelli black, mouth brown; width 0.5 mm. Body pale whitish, the warts concolorous, except the subdorsal ones which are blackish, those on joint 2 larger than the others. An indistinct white dorsal line; venter and legs pale. Hair very long, irregular, no brush-tufts, pencils nor retractile tubercles.

*Second stage.*—Head pale reddish brown; width 0.8 mm. Body pale yellowish, a subdorsal black band and a broad dorsal one on joints 9-12; a brick red dorsal shade on joints 4 and 9; a few plumed black hairs from the subdorsal warts on joint 2 and the dorsal on joint 12; retractile tubercles present, one each on joints 10 and 11 dorsally, pale yellowish, just tinged with red, but distinct. Cervical shield yellowish.

*Third stage.*—Head brownish red, mouth darker; width 1.1 mm. Cervical shield orange. Body pale yellow dorsally, a broad dark gray lateral band and black dorsal band, triple on joints 3 and 4, wide on joints 5-8

\* Ridgway's Nomenclature of colors, Pl. vi. fig. 21.

(touching the lateral band), narrower on joints 9-12 and absent on joint 13. Long plumed pencils on joints 2 and 12; brush-like tufts of pale yellowish hair on joints 5-7, with traces of another on joint 8; retractile tubercles large, coral red. Hair thin, long and black; warts pale grayish. The markings of the mature larva are practically acquired at this stage.

*Fourth stage.*—Head and retractile tubercles coral red; cervical shield orange; width of head 1.6 mm. Body as before but the brush-tufts are complete on joints 5 to 8 and colored white or yellowish.

*Fifth stage.*—Head, cervical shield and retractile tubercles coral red; width of former 2.1 mm. The ornamentation is as before; the space between the dorsal and lateral bands is yellow on joints 9-12.

*Sixth stage.*—(♂ mature larva) Head dark coral red, slightly shiny, ocelli a little darker, jaws brownish; width 2.5 mm. Cervical shield and retractile tubercles coral red; warts pale yellow shaded with blackish, arranged as in the other species of *Orgyia*; hair pencils on joints 2 (two) and 12 (one) composed of long, plumed, black hairs; four large, white or yellow brush-like dorsal tufts on joints 5-8. A broad velvety black dorsal band enclosing the small yellow tubercles of row 1 and the red retractile ones; on joints 3-8 the dorsum is all black except the warts; a yellow subdorsal band; lateral region dark gray except the warts, joint 13 only shaded with gray; a yellow substigmatal band; a black stigmatal line; venter gray and legs pale yellow. Hair long, thin and black.

*Seventh stage.*—(♀ larvae only.) As in the previous stage; width of head 3.5 mm.

*Cocoon.*—Double, composed of hair and silk, but thin.

*♂ pupa.*—Cylindrical; antenna and wing cases prominent; abdomen tapering, the cremaster flattened, its hooks fastened in the silk of the cocoon. Color yellowish white or more or less shaded with dark brown or

black, the back covered with long hair and three dorsal tufts of short scales. Length 13 mm.; width 5 mm.

♀ *pupa.*—Like the ♂, but larger and more robust. The wing cases are present, 6.5 mm. long, (though the wings of the ♀ moth are but 2.5 mm. long) but the antenna cases are small.

OEDEMASIA SALICIS Hy. Edwards.

*Egg.*—Hemispherical but rounded at base, base flattened centrally; smooth slightly shiny, under the microscope divided into small hexagonal areas, their boundaries not distinctly raised and hardly distinct enough to form reticulations; diameter 0.8 mm. Laid over 100 together on the under side of a leaf. The little larva hatches by eating a large hole in the top.

*Food plants.*—Maple (*Acer macrophyllum*) and apple (*Pyrus malus*) and also, according to Mr. Edwards, willow (*Salix*) and according to Dr. Behr, walnut (*Juglans*).

SCHIZURA CONSPECTA Hy. Edwards.

1874—Hy. Edw., Proc. Cal. acad. sc., v. 5, 366. *Heterocampa* (?)

1882—Grote, Check list, p. 19. *Coelodasy.*

1891—Smith. List lep., No. 1311. *Schizura.*

I found a larva, which may belong to this species, in Yosemite, Cal., but it was unfortunately destroyed while I was attempting to rear it. As there is no other species of *Schizura* known from California, I give what notes I was able to obtain under the above heading.

*Egg.*—Spheroidal, flattened at base; diameter 1.1 mm. Under the microscope it is seen to be covered with very narrow slightly elevated lines forming irregular pentagonal or hexagonal reticulations, becoming very small at the micropyle. Laid together on the under side of a leaf. The little larva hatches by eating a hole in the side.

*First larval stage.*—Head bilobed, rounded, very shiny blackish brown, yellowish at the vertex; ocelli black; a few hairs; width 0.6 mm. Cervical shield with a pair of tubercles; joints 5 and 12 slightly enlarged dorsally;

feet normal, but the anal pair elevated; smooth, rounded-conical tubercles, normal in arrangement, rather large and each bearing a long hair, many of which are swollen at the tip. Body honey yellow, the humps and lateral region wine red; cervical shield, anal plate, tubercles and anal feet blackish; other feet shiny black.

*Second stage.*—Head bilobed, high, narrowing to vertex and flat in front; a tubercle at the vertex of each lobe; width 0.8 mm; uniform brown, not shiny, the vertex a little darker. Body slightly enlarged dorsally at joints 5 and 12, the tubercles very large, especially dorsally, conical, smooth, each with a short seta which is transparent and swollen at tip. Anal feet elevated, partly aborted. Body reddish brown, lighter dorsally and mottled with yellow; joints 5 and 12 are dark as are also the tubercles. Cervical shield and anal plate dark. A yellow dorsal spot on joints 4 and 11 bisected by a brown dorsal line.

*Food plant.*—Maple (*Acer*).

*CLISIOCAMPA CONSTRICTA* Stretch.

*Var. STRIGOSA* Stretch.

1881—Stretch, *Papilio*, v. 1, p. 67.

1882—Grote, Check list, p. 21. *Sp. dist.*

Mr. Stretch described this form apparently from a single ♂ example from the Yosemite Valley and in Grote's list it stands as a distinct species. This is an error, however, as *C. strigosa* is merely a local form of *C. constricta* hardly differing sufficiently to deserve the varietal name.

The principal differences noticed by Mr. Stretch in his description seem to be the larger size of *C. strigosa*, the greater width of the band on fore wings, the distinct spots on the fringe and the common line on the wings below. From the series of bred specimens before me, these characters are seen to be decidedly variable, and many of the specimens are nearer to the typical form than to Mr. Stretch's description of *C. strigosa*.

The larva is identical with that of *C. constricta* as described by Mr. Hy. Edwards.

The larvae form no tent, but live in the manner of *C. disstria*, separating as they become large and wandering about considerably before forming their cocoons. In the Yosemite Valley they feed on the black oak (*Quercus kelloggii*).

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